Welcome to Winter Operations

- The right product
- The right application rate
- The right equipment

Understanding Storm Types

All de-icing products

must be in a

Liquid form to melt

snow and ice

Salt verses Calcium Chloride

At 30 degrees 1 pound of salt will melt 46.3 pounds of ice.

At 30 degrees 1 pound of calcium will melt 31.1 pounds of ice.

Sodium Chloride/Rock Salt

Pro’s: inexpensive, easy to apply, readily available,

Con’s: corrosive, not practical below 15 degrees

Calcium Chloride

Pro’s: melts ice faster than salt and works down to -20 degrees

Con’s: more expensive, draws moisture that can become slippery

Magnesium Chloride

Pro’s: melts ice faster than salt, practical use down to 5 degrees

Con’s: more expensive, attracts moisture that can become slippery

Agricultural Based Products

Pro's: compatible with other products, less corrosive

Con's: expensive, environmental concerns

Aggregates

Pro’s: inexpensive, offers some traction

Con’s: has no melting properties, clogs storm drains

No Materials Needed?

- Blowing snow
- Heavy snow
- Dry snow
- Sub zero temperatures

Choosing the Right Material

- Levels of service
- Expectations
- Budget
- Storage Capacity or type
- Equipment capabilities

Levels of Service and Expectations

The Use of Liquids

Why use Liquids?

- Ready to work
- Less material used
- Lower cost
- Easy to apply

Liquid Route
Salt Brine

Dry Route
Dry Salt

Salt Brine Application Rates

- Anti-icing – 40/60 gallon/lane mile
- Pre-wet – 8/12 gallon/ton
- Deicer – 70/100 gallon/lane mile

Combo liquid/granular equipment

Combo liquid/granular equipment

Combo liquid/granular equipment

Equipment Selection

- Level of service
- Budget
- Road width
- Climate
- Labor availability

Brine Anti-icing Equipment

Spreader Dump Truck & Plow

Snow Blower

Tow Plow

Wing Plows

Under Body Plow

V Plow

Maintenance Decision Support System

What is MDSS?

- A computer system that integrates weather, road and maintenance information to provide scientifically driven recommendations

RWIS – Road Weather Information Systems

Strategically Placed

Properly Located

JTRP
Joint Transportation Research Projects

- RWIS
- MDSS
- Performance metrics
- Liquid applications

Performance Metric using cost per weather hour/lane mile/

	CY12 Target Formula (A*30%)+(B*25%)+(C*25%)+(D*20%)					
CY11 Cost per Weather Hour per Lane Mile ($/HR-LNM)	(A) Adjusted CY11 $/HR-LNM (30%)	(B) CY11 Adjacent Subdistrict Average (25%)	(C) CY11 District Average (25%)	(D) CY11 State Average (20%)	CY12 Target	% Change from CY11 Actual
Statewide	$ 5.69	$ 5.69	$ 5.69	$ 5.66	$ 5.69	**$ 5.68**	-0.2%

Performance Measurements

- Service miles/manhour
- Material usage
- Overtime
- Traffic speed (future)

QUESTIONS

Thank you!

Phil Ivy
INDOT Snow & Ice
Program Manager